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# NUTRITION COMMITTEE NEWS

For exchange of  
information on  
nutrition education and  
school lunch activities

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## FALLOUT SHELTERS AND NUTRITION EDUCATION

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Nutritionists and workers in allied fields are now, or may soon be, called upon to advise families and communities on the kinds and amounts of food necessary to stock fallout shelters.

Some State, voluntary, and industrial groups, and the U. S. Department of Agriculture have issued bulletins containing food lists and menus along with other helpful information. Some of our readers are interested in learning the reasoning that determined the content of these publications as a basis for adapting this material to meet the needs of their communities.

In this issue of NCN, Dr. M. J. Babcock, associate research specialist, department of agricultural biochemistry, Rutgers University, sets forth some commonsense guidelines for local workers facing this problem. Dr. Babcock—chairman of the civil defense committee, New Jersey Nutrition Council—actively participated in the preparation of "Meals for Fallout Shelters," issued by the New Jersey Division of Civil Defense.

While we have a receptive audience, we must be ready with realistic and practical suggestions for providing good nutrition under these conditions. If we do not provide the answers, many persons interested in the promotion of relatively high cost or unsuitable specialty foods will do so. The mysteries of nuclear radiation and the unfamiliarity of the public with shelter living make this a fertile field for exploitation.

The principles of good nutrition are unchanged when applied to living in fallout shelters. However, we must become familiar with the unique environment which severely limits the selection and preparation of foods.

### THE SHELTER SITUATION

The American people have great difficulty in visualizing a situation in which they would be living in shelters. Many, in fact, have not even seen the inside of a model shelter. To provide a better understanding of how well Americans would adjust to living in various types of shelters, a few studies have been made with typical groups.

#### Living in a Family Shelter

A study of a family that lived for 2 weeks under shelter conditions was made by the department of psychology at Princeton University (1). The family faced the hardships of isolation, crowded quarters, and poor ventilation, all without benefit of electric power, running water, a stove, or a refrigerator.

The study showed that it was perfectly feasible to live under such conditions, while consuming ordinary, non-perishable foods. The water allowance of one-half gallon per person per day was more than enough for all of the family needs. Other studies and newspaper reports of families testing fallout shelters have confirmed the feasibility of living in low-cost family shelters.

### A NEW OPPORTUNITY FOR NUTRITION EDUCATION

The recent surge of public interest in fallout shelters has offered an opportunity to teach the established principles of good nutrition in a new setting.

We have an audience motivated to accept changes in their way of living, including eating habits, during an emergency period. As people come to understand that they cannot follow their customary eating habits while living in a shelter, they expect to modify their food patterns somewhat. Once accepted, these food patterns may unconsciously influence regular daily diets.

## Living in a Community Shelter

The American Institute for Research has conducted one 2-week and three 1-week studies of larger groups in a crowded shelter (2). Groups of 30 persons of all ages and from all walks of life lived together in a room which provided only 8 square feet of floor space per person.

Ordinary foods heated on a two-burner electric hot plate were rated as having good palatability by 70 percent of the subjects; fair by 26 percent, and poor by 4 percent. Water consumption, exclusive of that used for toilet flushing, was about 3 quarts of the 4-quart allowance per person per day. This study and others cited in that report, demonstrate the feasibility of living in a crowded group shelter.

Living in a shelter for an extended period of time is practicable, but only if the special problems imposed by shelter design are understood and provision is made in advance to meet them. Special problems which affect feeding in shelters are caused by the lack of adequate storage, cooking, and sanitary facilities.

## Storage Facilities

A fallout shelter usually will consist of a walled-off corner in the basement of a home, a special underground room adjacent to a home, the basement or corridors of a public building, or, perhaps, a special community shelter. In any type of shelter the amount of storage space per person will probably be very limited.

The first reaction of most persons confronted with this storage space problem is to think of using concentrated foods. These are foods which provide more nutrients per cubic inch because they contain little water and little indigestible residue. Water, however, is the most vital of the nutrients and some residue, or bulk, is desirable in foods to prevent constipation. Because of the crowded situation and poor ventilation people in shelters will not do much exercising. Whatever storage space might be saved by stocking a concentrated food would be required to provide additional water and bulk.

It has been estimated that  $1\frac{3}{4}$  cubic feet per person is sufficient to store a 2-week supply of common foods (3). This is probably a minimum space allowance.

## Cooking Facilities

With any type of shelter the ventilation will usually be too poor to permit the use of a fuel-burning stove. In shelters which have no forced ventilation the air movement will be insufficient to remove the products of combustion. In shelters with forced ventilation the air must be filtered to avoid sucking in fallout dust, which may be suspended in the outside air. The amount of power required

to draw air through a filter, whether the blower is operated by manpower or emergency electric power, will usually limit the air supply to that needed for breathing.

In small shelters it may be feasible to warm some foods with a small flame provided by canned heat or candles by placing them near the exhaust vents so that most of the combustible products will be removed. In large shelters provided with an electric generator, an electric hotplate or frying pan may be practical. Such equipment should be provided in all shelters for use as long as electric power is available, but menu planning must be based on the assumption that cooking will be limited to warming a few precooked foods.

Although cooking would be desirable to increase the variety and palatability of shelter foods, it is not needed to meet nutritional requirements. The nutrients in canned foods can be fully utilized by our bodies without further cooking.

## Sanitation Facilities

Since little, if any, hot dishwater can be counted on, dishwashing should be minimized by using disposable plates, cups, spoons, and forks. Utensils that must be reused may be sterilized by soaking in hypochlorite solution. The washing of pans may be reduced by lining pans with aluminum foil, using a greaseless frying pan or by warming foods in the original can.

There will be little food in the garbage because foods stocked in shelters will be completely edible and because food will be carefully conserved. Cans, packages, and disposable dishes should be flattened and stored in plastic bags (disinfectant may be added) for the first 2 days. Radiation intensity will usually have decreased enough after 2 days to permit opening the door to set garbage outside the shelter.

## Water Supply

Since the nutrition problem is closely related to the availability of water for drinking, food preparation, and dishwashing, we should be able to give practical suggestions for providing an adequate water supply. Ample water could be supplied in some areas by a well installed in the shelter. If the well meets the usual sanitary requirement of being free from surface contamination, radiological contamination would not be a problem.

When water must be stored, the amount required must be carefully considered. One-half gallon per person per day is considered adequate by Government officials, but more would be desirable for dishwashing and bathing (3).

The minimum amount of water needed should be stored

in the shelter. Additional water can be safely stored in a tank outside of the shelter and piped in. The water in the tank can be kept fresh by having the regular house supply flow through the tank.

Water may be stored in the shelter in easily-handled jugs, or space may be saved by using a large tank fitted with a faucet. Plastic jugs are better than glass because they are shatterproof; but glass jugs may be used if packed well to protect them from damage by an earth tremor. Water should be protected from light to prevent the growth of algae. It should be sampled at intervals to be sure that off-flavors do not develop. If an objectionable flavor is noticed, the water should be replaced with purified water (4) and perhaps, stored in a different container.

### Morale Value of Food

Although we are concerned here with a survival situation, it is unrealistic to assume that palatability is a minor factor. It might be thought that if a person is hungry enough he will eat any food. If it is unpalatable, however, he may not eat enough to meet the nutritional requirements for good health. This is especially true for persons who are accustomed to high-quality foods. Military experience has shown that American soldiers will discard rations and go hungry to the point of losing weight if they consider that the rations are unpalatable or monotonous.

To avoid loss of strength at a time when survivors may be subject to severe emotional and physical stresses, nourishment should be provided by familiar foods, prepared in as appetizing a manner as possible under the circumstances. Special survival rations, such as formula-diet preparations or multipurpose food, would not provide the satisfaction of customary foods, whether or not they contained sufficient nutrients.

Nonperishable items from the four foods groups used in the USDA publication, "Food for Fitness—A Daily Food Guide," are available in grocery stores. The milk group is available as flavored and unflavored dried milk, evaporated milk, condensed milk, and cheese products. The meat group can be supplied by canned meats, fish, or poultry, and by canned stews and other mixed dishes which simplify meal preparation. Gas-forming foods, in general, are not recommended.

The need for the vegetable-fruit group can be met by a wide variety of canned products. Foods from this group supply considerable liquid to the diet also, but the crispness of fresh salads is, of course, lacking. In the bread-cereal group, one can select from numerous breakfast cereals, crackers, and cookies, but some experimentation may be needed to find products that do not become stale after storage for a few months. A few canned cake and pudding

products are sold, but canned white bread is not available in retail markets.

### Rotation of Food Supply

During prolonged storage, foods gradually become less palatable and some nutritional value may be lost. If the humidity is very high, the packaging may deteriorate. These effects are accelerated by high temperatures, but shelf life varies widely, depending on the characteristics of the product and the packaging. Most canned goods will keep for several years but a plan to replace them about every 6 months would be desirable to ensure against any loss because of flavor changes. Products packaged in wax paper usually will last about 3 months, but if in paper laminated with foil or plastic, they will keep much longer.

Shelter foods that are served frequently at the family dinner table, or in the cafeteria of an institution, can easily be rotated and utilized without loss. Other items, such as various bread substitutes and canned meats, may be less acceptable or more expensive than similar fresh foods. While it would be unrealistic to assume that shelter food supplies could be maintained without added expense, the cost can be kept to a nominal amount with careful planning, followed by periodic inspection and sampling. The extra cost is the "premium" one pays on his "survival insurance."

### Menus Are Available

*Family shelters.* — Several organizations have developed menus to meet the special requirements of fallout shelter feeding. Brief lists of foods by food groups have been prepared for family use by USDA nutritionists, and published by the Office of Civil and Defense Mobilization (5, 6). Since these food groups are essentially the same as those currently found in nutrition education materials, it is easy to use the present interest in shelter feeding to re-emphasize the general principles of good nutrition.

The U. S. Department of Agriculture (4) has published 3-day sample menus for family shelters illustrating the use of foods in the four food groups. The New Jersey Division of Civil Defense (7) has published menus prepared by the New Jersey Nutrition Council for a family of four for 2 weeks. A market list is included.

As in normal feeding practice, suggested menus should be adapted to meet family preferences and any special dietary needs. The menus should supply the usual nutritional requirements for sedentary persons. The main difference in planning is that can sizes should be selected to avoid leftovers because of the lack of refrigeration.

*Large group shelters.* — The U. S. Department of Agriculture (3) has compiled information on the cost, storage

space, and estimated rotation schedule for 55 individual food items suitable for rotation through a cafeteria. The initial cost of stocking a 2-week supply at wholesale prices was estimated in 1960 at 75 cents per person per day. At retail prices, a realistic estimate would be approximately \$1 per person per day.

The New Jersey Bell Telephone Company (8) has prepared a booklet giving a 3-day cycle menu, order list (including paper goods and utensils), and specific instructions for preparing each item. The initial food stocks, selected from lists of high-preference items that can be utilized in normal cafeteria operation, cost \$1.21 per person per day.

## IF ONE HAS NO SHELTER

Many persons do not now have a shelter area that they can stock with food and water. In such cases, tenants should encourage landlords to provide shelter areas; and all persons without shelters should become familiar with any public shelters in their neighborhoods and with basements and inside corridors of multistory buildings in which they might take refuge.

Since such areas will seldom have adequate stocks of food, it would be prudent to bring what one can. For this purpose, one must carefully consider in advance what to take and have it packed in a suitable container.

Since public shelters would be very crowded, bulky items could not be accepted. A large, strong plastic pail with lid might be a suitable container because it could be filled with water, used for waste disposal or hung overhead to save floor space. While the highest priority must be given to supplying one's requirement for water, water is so heavy to carry that one should consider the probability that he could fill his pail at the shelter while there is still water pressure. In shelter areas in basements one can usually drain some water from the hot water tank and from waterlines in the building.

The second priority would be for food. Dry foods would be lightest in weight, but a few high-energy canned foods, such as beef stew, would be desirable in case the water supply in the shelter is inadequate. Any special requirements, such as infant and diabetic foods, must be supplied by the individual. As with a shelter food supply, these foods should be replaced before the end of their shelf lives and utilized as a component of one's daily meals.

Nonfood items, such as medicines, transistor radio, and flashlight, should also be considered when planning.

## IN CONCLUSION

While the suggested educational theme centers on foods for fallout shelters, such a reserve of food would help greatly in meeting a disaster of natural origin.

The most critical need is water. Next comes the requirement for energy. To maintain efficiency in a time of stress one also needs protein and water-soluble vitamins.

Adults might get along satisfactorily for a short time with low levels of fat-soluble vitamins and minerals, but provision must be made for children and pregnant women. Then too, in the shelter situation there is the need to maintain optimum calcium nutrition (to minimize strontium 90 absorption) in the absence of sunlight (vitamin D), plus the prospect of tight food rationing afterward.

To ensure that nutrients offered are actually consumed, they must be supplied in foods acceptable to the particular age, sex, religion, and ethnic groups involved. All of these factors point to the wisdom of using familiar foods.

The emphasis here on the problems involved and on the desirability of making provision in advance for optimum nutrition should not be taken to mean that lesser measures would be futile. In a survival situation a little water or food or knowledge may well be the difference between life and death.

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Nutrition Nonsense Spotlighted at National Congress on Quackery

Prepared by Food and Drug Administration

"Nutrition quackery bilks the public of an estimated half billion dollars a year."

This astonishing statement was made by several authorities at the first National Congress on Medical Quackery held in Washington in early October.

The term "nutrition quackery" applies to false sales promotion of vitamin-mineral supplements with "loaded" formulas and other so-called health foods. Such promotions often border on the "cure-all" variety, or exploit the nutritional myths of soil depletion, subclinical deficiencies, nutritive value destroyed by overprocessing, and so on.

The quackery of product marketing appears largely in three major areas: False claims for drugs and cosmetics; pseudoscience in nutrition; and fake medical devices. The Food and Drug Administration reports that "nutrition quackery" is the most widespread and expensive type of promotional charlatanism in the U. S. today.

All forms of quackery received a good airing when the Food and Drug Administration and the American Medical Association joined forces to sponsor the National Congress on Medical Quackery. The purpose of the conference was to stimulate public education and vigorous law enforcement. Participants in the conference included the Department of Justice, the Post Office Department, and the Federal Trade Commission. State and local enforcement agencies were represented by the Association of Food and Drug Officials of the United States and the Federation of State Medical Boards of the United States. National voluntary agencies and related groups included the National Better Business Bureau, American Cancer Society, Arthritis and Rheumatism Foundation, Harvard School of Public Health, and science writers and editors.

Dr. Frederick Stare, Chairman, Department of Nutrition, Harvard School of Public Health, and noted health columnist cautioned that quacks "have something to sell . . . they line their pockets with your money," and warned, "Don't be taken in by them. No one food is essential to health. Some sixty nutrients are. By eating a varied diet from foods available in any grocery store, you will get them."

Citing sea water as a recent example of faddism, Dr. Stare pointed out that the idea behind the sale of sea water as a food supplement is "the misconception that because such water contains numerous mineral and trace elements, and the body needs some of these elements, it will be healthful to take a little sea water every day. From this it is only a step to flagrantly false claims that sea water is a panacea for all the diseases of mankind. Ignored is the fact that the same mineral elements are present in common foods, and, with the possible exception of iodine, they are abundantly supplied by the ordinary diet."

Dr. Stare appealed to all professional groups and individuals to accept responsibility for informing the public on the facts versus the fancies in the field of nutritional quackery. He urged more active participation in the surveillance of radio, television, and advertising activities on the part of both professional and business organizations, in addition to greater activity by the appropriate Federal agencies. Pointing to the tremendous amount of solid scientific research engaged in by the legitimate food industry, Dr. Stare said that this industry deserved the confidence of the American consumer. He pointed out that health food stores do not have research departments staffed with well-trained food scientists as does the food industry.

On the broader subject, HEW Secretary Abraham Ribicoff said that quackery's total cost of over \$1 billion annually only introduces the story. "In terms of false hopes raised, of delusions fostered, of tinkering with life itself, the cost cannot be measured."

The conference pointed up the need for stronger laws to deal with some forms of quackery; larger appropriations for enforcement of some laws already on the books; better coordination of efforts at Federal and State levels; self-discipline on the part of the professions and communications media; and increased emphasis on public education to combat all forms of quackery.